

REMARKS

The Office action of 11 August 2005 (Paper No. 20050801) has been carefully considered.

The specification is being amended to correct a typographical error. Claims 7 and 13 are being canceled without prejudice or disclaimer, and claims 1, 4, 9 and 11 are being amended. Thus, claims 1 thru 6 and 8 thru 12 are pending in the application.

On page 2 of the Office action, the Examiner objected to the drawings as not showing every feature of the invention specified in the claims. Specifically, the Examiner requires showing of the “field-effect transistor elements” recited in claims 7 and 13. Claims 7 and 13 are being canceled without prejudice or disclaimer, and thus the objection to the drawings no longer applies.

In paragraph 1 on page 3 of the Office action, the Examiner rejected claims 1 thru 13 under 35 U.S.C. §102 for alleged anticipation by Horiuchi, U.S. Patent No. 5,220,597. For the reasons stated below, it is submitted that the invention recited in the claims, as now amended, is distinguishable from the prior art cited by the Examiner so as to preclude rejection under 35 U.S.C. §102 and/or §103.

The present invention relates to a key signal scanning apparatus of a complex

telephone and, more particularly, to a key signal scanning apparatus of a complex telephone for scanning a key signal without a reciprocal influence when external power is supplied and not supplied. A separator circuit is installed between a main microprocessor which scans the key signal when external power is supplied and a sub microprocessor which scans the key signal when external power is not supplied.

The key signal scanning apparatus of a complex telephone comprises: a keypad having plural row ports, plural column ports, and plural keys for generating a key signal in accordance with pressing of a key by a user; a main microprocessor having row output ports and column input ports, and which operates by externally supplied power for supplying a timing signal to the row ports of the keypad by using the row output ports, for receiving the key signal from the column ports of the keypad by using the column input ports, for detecting a key pressed by the user by scanning the received key signal, and for outputting a dialing signal corresponding to the scanned key; a sub microprocessor which operates when power is not supplied from an external source for outputting a dialing signal generated according to the key signal inputted from the row ports and the column ports of the keypad; a first separator circuit for cutting off current flow to the row output ports of the main microprocessor from the row ports of the sub microprocessor; and a second separator circuit for cutting off current flow to the column ports of the sub microprocessor from the column input ports of the main microprocessor when power is not supplied from the external source. The present invention can scan the key signal

without reciprocal influence when external power is supplied and not supplied by provision of a separator circuit between the main microprocessor scanning the key signal when external power is supplied and the sub microprocessor scanning the key signal when external power is not supplied.

The sole reference cited against the claims of the application is Horiuchi, U.S. Patent No. 5,220,597, entitled *DIALING APPARATUS FOR POWER FAILURE EXTENSION TELEPHONE SET OF KEY TELEPHONE SYSTEM*, issued on June 15, 1993. Horiuchi '597 discloses a dialing apparatus used for a power failure extension telephone set in a key telephone system. The power failure extension telephone set is driven by power supplied from a key service unit so as to function as an extension telephone set when power is supplied to the key service unit, but directly connected to an office telephone line so as to function as an individual telephone set when power is not supplied to the key service unit. The dialing apparatus comprises a dial switch of single contact-layer structure and a control switch circuit connected to the dial switch and changed over according to the power supply or power failure condition of the key service unit. That is, when power is supplied to the key service unit, the control switch circuit connects the dial switch to a control circuit. This control circuit is activated by power supplied from the key service unit and detects the state of the dial switch to transmit a control signal to the key service unit. On the other hand, when power is not supplied to the key service unit, the control switch circuit connects the dial switch to a dial signal

transmit circuit. This dial signal transmit circuit is activated by power supplied through an office telephone line and detects the state of the dial switch whenever a handset is off-hooked, so as to transmit a call to the office telephone line.

In the Office action, the Examiner stated the following correspondence between claimed elements of this application and elements disclosed in Figures 2 and 6 of Horiuchi '597:

Elements of claims 1 and 9

Keypad
Main microprocessor
Sub microprocessor

Horiuchi '597

Dial switch 31
Control circuit 19
Dial signal transmit circuit 20

Elements of claims 1 and 2

First separator circuit
Second separator circuit
Third separator circuit

Horiuchi '597

Diode group 22
CMOS switch 211
CMOS switch 212

Elements of claim 9

First separator circuit
Second separator circuit

Horiuchi '597

CMOS switch 211
CMOS switch 212

However, whereas independent claims 1 and 9 recite that the main microprocessor receives a key signal from the column ports of the keypad, Horiuchi '597 does not

disclose any means for the control circuit 19 (main microprocessor) of Figure 2 to receive a key signal from the column ports 33 of the dial switch 31 (the keypad). In fact, the diode 22 blocks such a key signal from reaching the central circuit 19.

In addition, whereas independent claim 1 recites that the first separator circuit cuts off current flow from the row ports of the sub microprocessor to the row output ports of the main microprocessor, the diode group 22 (first separator circuit) of Horiuchi '597 (Figure 2) connects the column output port of control circuit 19 (main microprocessor) to the column inputs of dial switch 31 (keypad) for the purpose of transmitting sequential pulses thereto (see column 6, lines 36-40 of Horiuchi '597). Thus, the diode group 22 does not function in the same manner as the first separator circuit of claim 1.

Furthermore, whereas independent claim 1 recites that the second separator circuit cuts off current flow from the column input ports of the main microprocessor to the column ports of the sub microprocessor, CMOS switch 211 (second separator circuit) of Figure 6 of Horiuchi '597 connects row signal line 34 of dial switch 31 (keypad) to control circuit 19 (main microprocessor) when external power is supplied. Thus, the CMOS switch 211 does not function in the same manner as the second separator circuit of claim 1.

Furthermore, whereas dependent claim 2 recites that the third separator circuit cuts

off current flow from the column ports of the keypad to the column ports of the sub microprocessor, the CMOS switch 212 (third separator circuit) of Figure 6 of Horiuchi '597 connects row signal line 34 of dial switch 31 (keypad) to dial signal transmit circuit 20 (sub microprocessor) when external power is not supplied (i.e., fails), and thus the CMOS switch 212 does not function in the same manner as the third separator circuit of claim 2.

In addition, whereas independent claim 9 recites that the first separator circuit cuts off current flow from the column input ports of the main microprocessor to the column ports of the sub microprocessor, the CMOS switch 211 (first separator circuit) of Horiuchi '597 (Figure 6) connects row signal line 34 of dial switch 31 (keypad) to control circuit 19 (main microprocessor) when external power is supplied, and the CMOS switch 211 does not function in the same manner as the first separator circuit of claim 9.

Finally, whereas independent claim 9 recites that the second separator circuit cuts off current flow from the column ports of the keypad to the column ports of the sub microprocessor, CMOS switch 212 (second separator circuit) of Horiuchi '597 (Figure 6) connects row signal line 34 of dial switch 31 (keypad) to dial signal transmit circuit 20 (sub microprocessor) when external power is not supplied (i.e., fails). Thus, the CMOS switch 212 does not function in the same manner as the second separator circuit of claim 9.

Thus, for the reasons stated above, a rejection under 35 U.S.C. §102 is clearly not appropriate because Horiuchi '597 does not disclose each element and function as recited in the claims of this application.

Furthermore, a rejection under 35 U.S.C. §103 is also not appropriate because Horiuchi '597 does not even suggest the elements and functions recited in the claims. In fact, Horiuchi '597 actually teaches away from the functions recited in the claims by assigning other functions to the elements which, according to the Examiner's analysis, correspond to recited elements of the claims.

In view of the above, it is submitted that the claims of this application are in condition for allowance, and early issuance thereof is solicited. Should any questions remain unresolved, the Examiner is requested to telephone Applicant's attorney.

Respectfully submitted,



Robert E. Bushnell,
Attorney for the Applicant
Registration No.: 27,774

1522 "K" Street N.W., Suite 300
Washington, D.C. 20005
(202) 408-9040

Folio: P56928
Date: 11/10/05
I.D.: REB/JGS